

Pervasive Computing Made Easy ?

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and by CAIP's corporate members.*



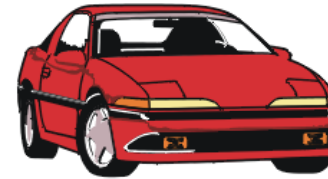


Medical Telediagnosis:

A physician in a rural clinic sees a patient and performs tests, some of which yield ambiguous results. The physician confers with a colleague at a university hospital. The medical information exchanged involves audio annotation and image analysis. The interpretation benefits from references to large medical databases with multimodal data.



Database



Distributed Mobile Office:

A person in transit (car, plane, boat, train) connects with the office and accomplishes knowledge work.



Database



Crisis Management:

Natural disaster relief and civil emergency teams manage and deploy assets and contribute critical information via symbols manipulated on terrain maps.

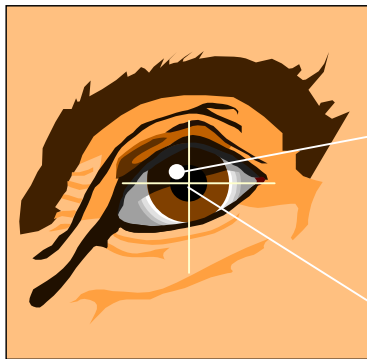
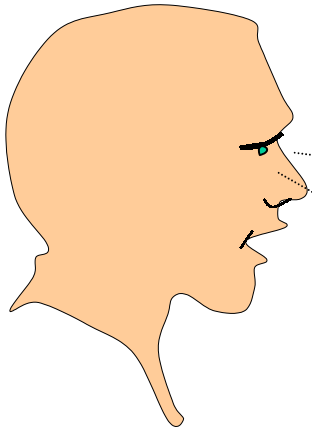
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User Interface Technologies

- **Sight**
 - region-of-interest detection
 - gaze tracking; visual gesture
 - face detection/recognition
- **Sound**
 - beam-steered microphone arrays
 - speech/speaker recognition
 - computer voice response
- **Touch**
 - force-feedback grasp
 - manual gesture

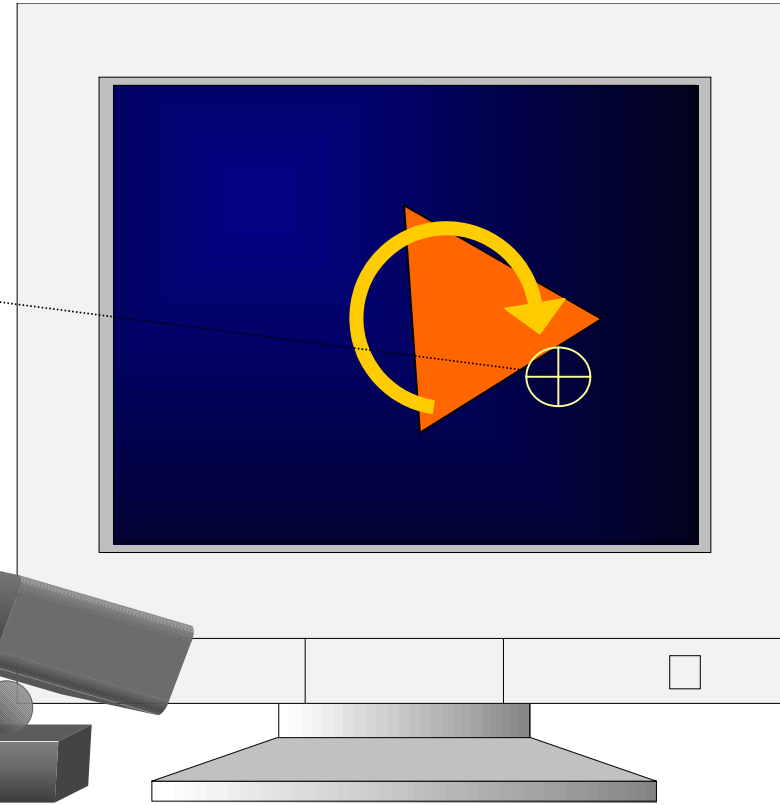
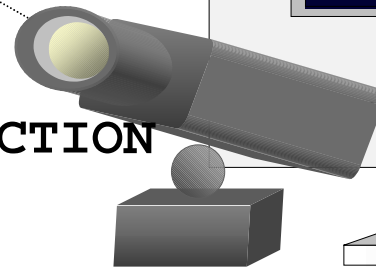
Gaze-Directed Visual Communication

User



CORNEAL REFLECTION

PUPIL CENTER



Gimbal-mounted camera and IR light source tracks gaze by computing angle between the corneal reflection and the centroid of the pupil.



RM-II Hand Master

Smart Controller Interface

Host computer

RS 232



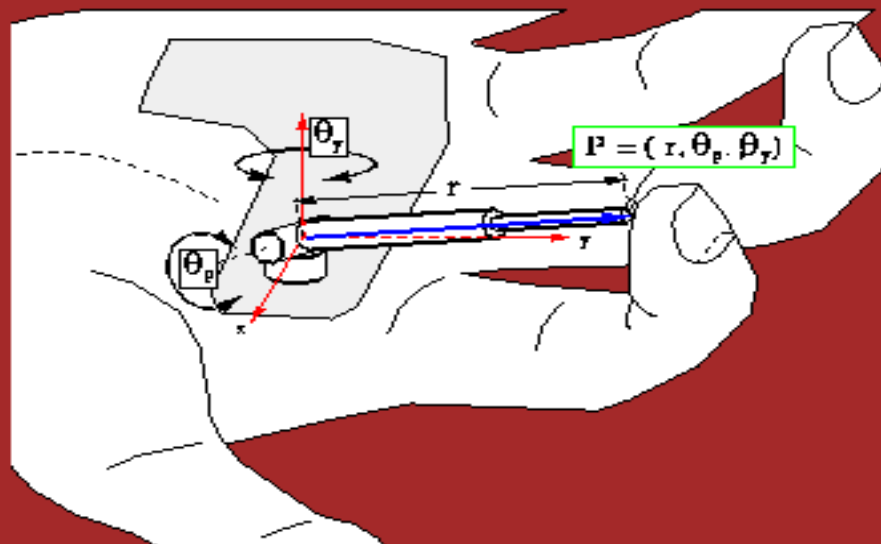
position

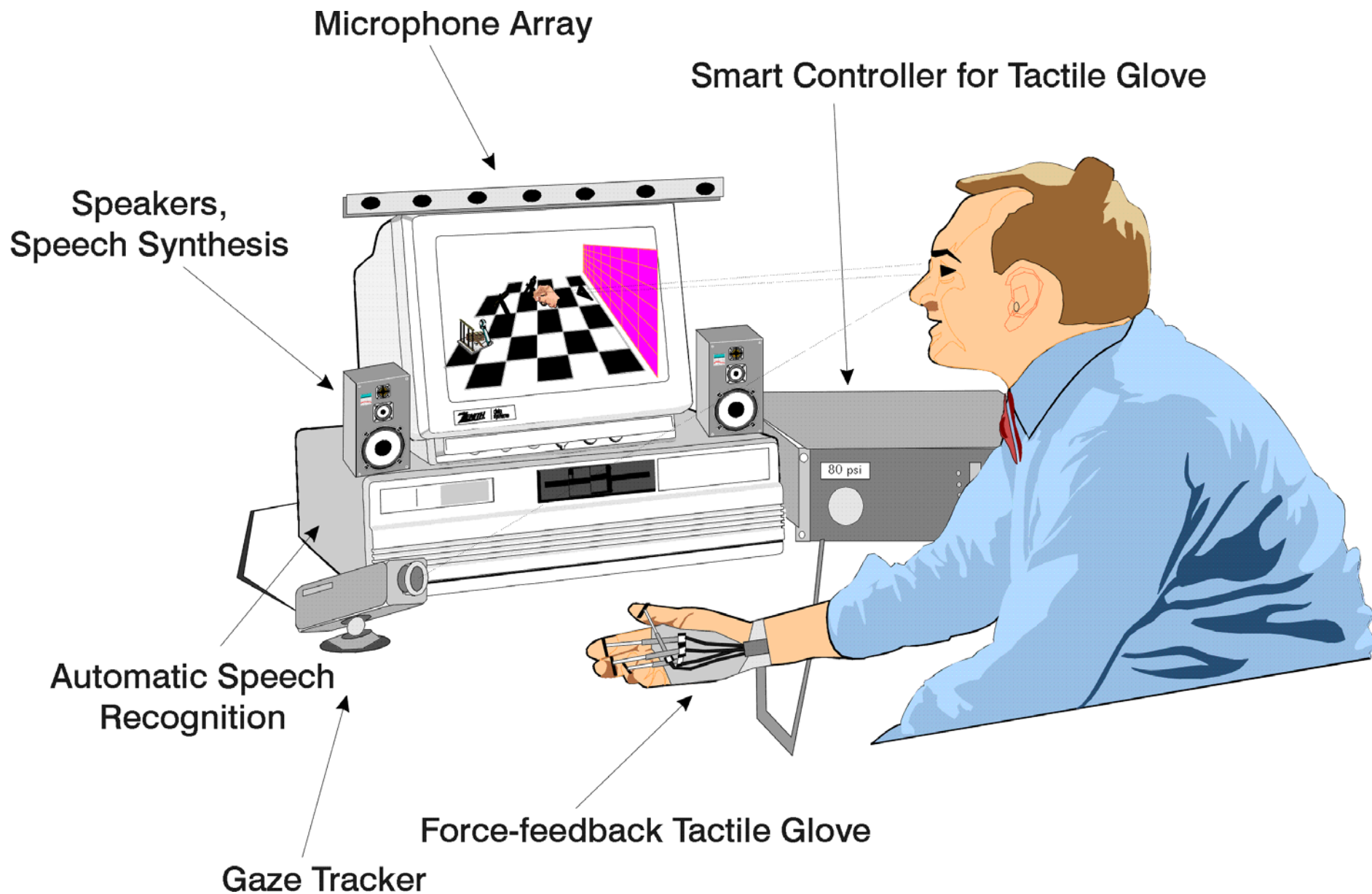
force

Pneumatic actuator

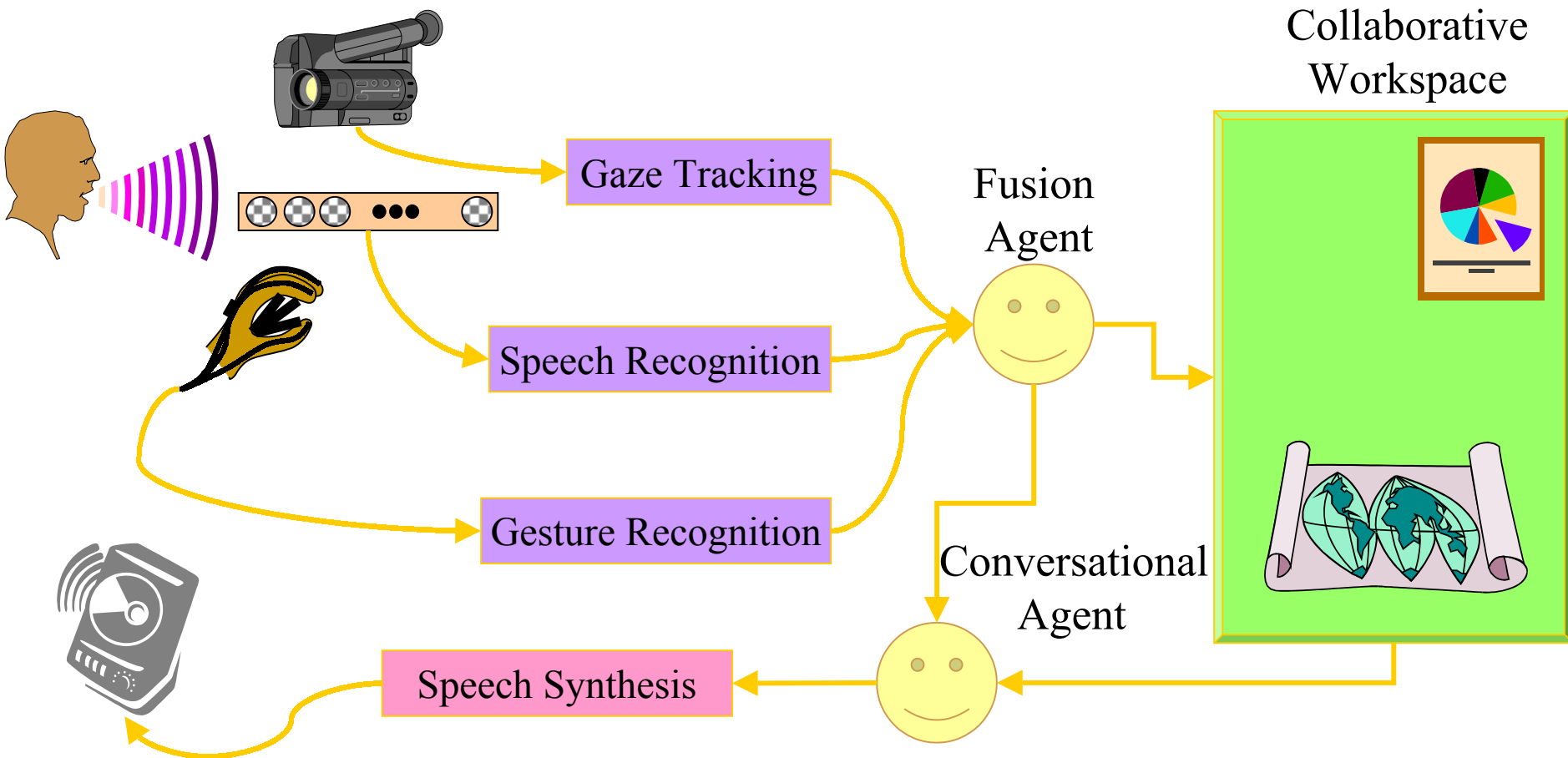
Non-contact
position sensors

user hand

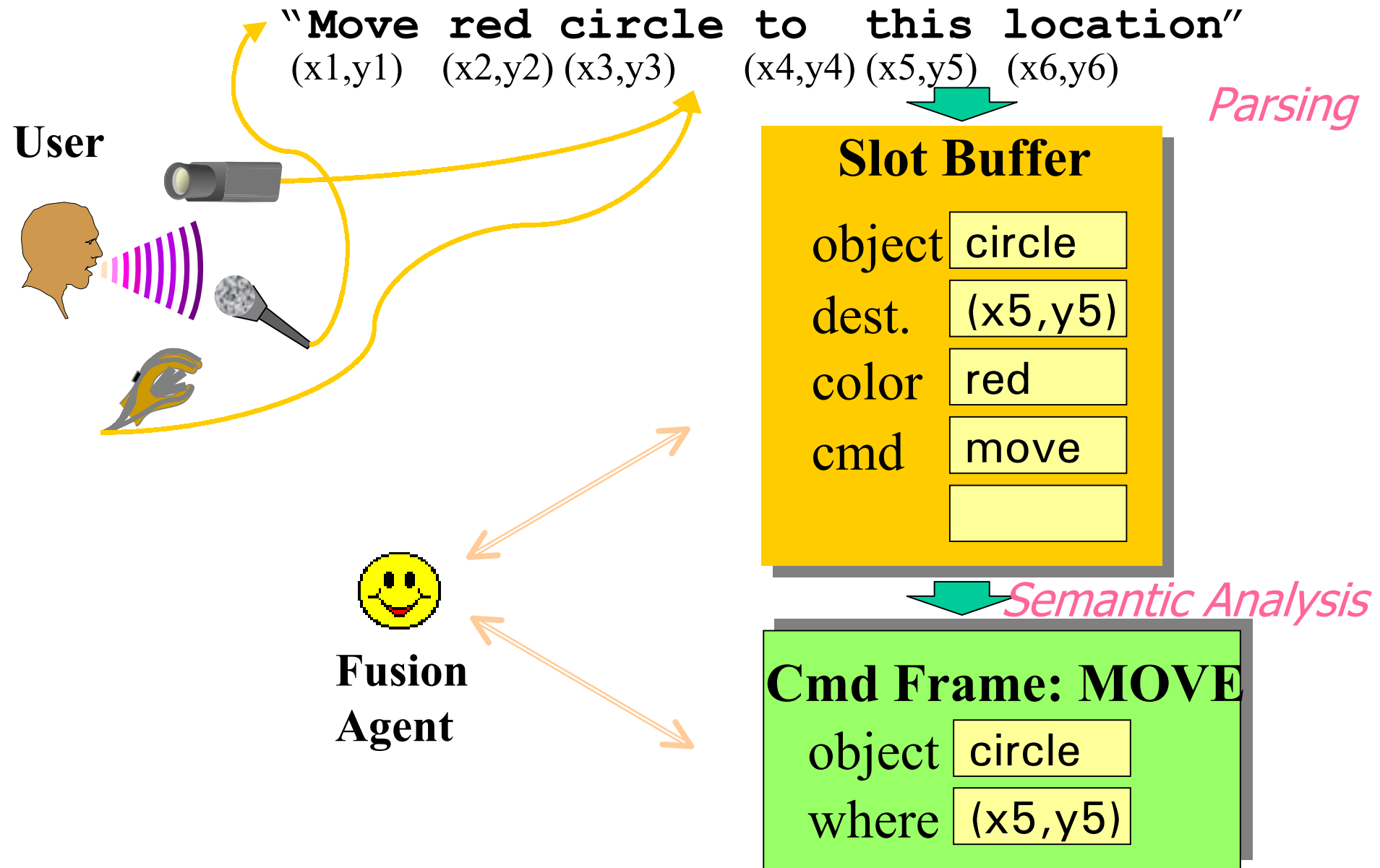




Multimodal Human/Machine Interaction

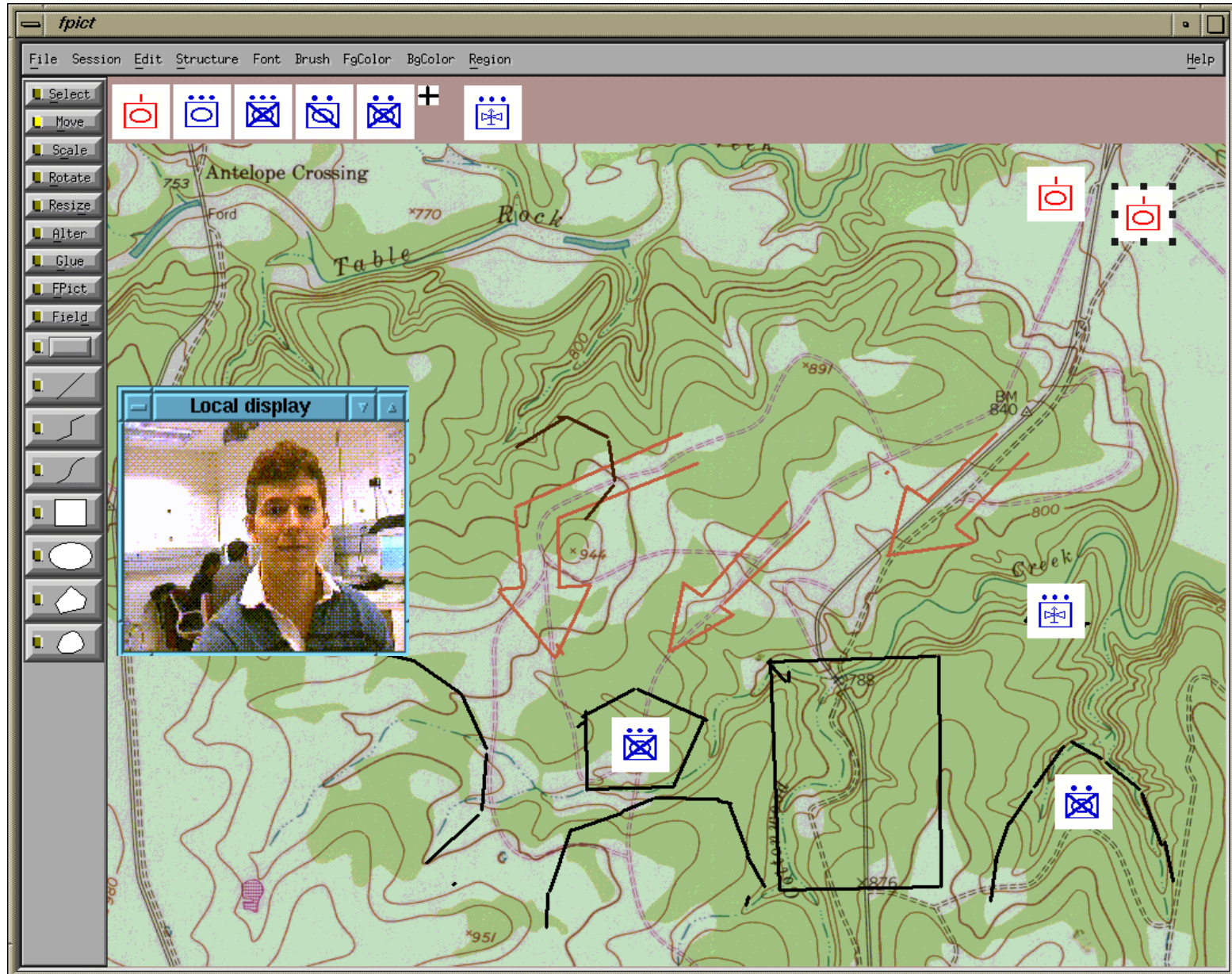


Frame Instantiation and Slot Filling





Application: Mission Planning



EDU.rutgers.stimulate.MIT

Hooked up to Octopus

create truck

EDU.rutgers.stimulate.MIT

Whiteboard MI Enhancement

EDU.rutgers.stimulate.MIT

Connected to Octopus

edu.rutgers.cnv.ThreeDecMap

ENVIRONMENTAL PARAMETERS

LIGHTING PARAMETERS

	On/Off	Up/Down	Front/Back
Left Side	<input type="checkbox"/>	45	45
Right Side	<input type="checkbox"/>	45	45

FOG DEMO ON/OFF ☐

COORDINATES

X	-7.3
Y	8.0
Z	5.2
View Angle	45

LOADING MODE

Continuous ☐

Edge Mode ☐

ADD/REMOVE OBJECTS

Add Object

Remove Object

edu.rutgers.military.AreaMap

File Edit View Help

150%

San Fernando

Checkpoint

Baguio

helicopter

truck0

camp0

Pitican

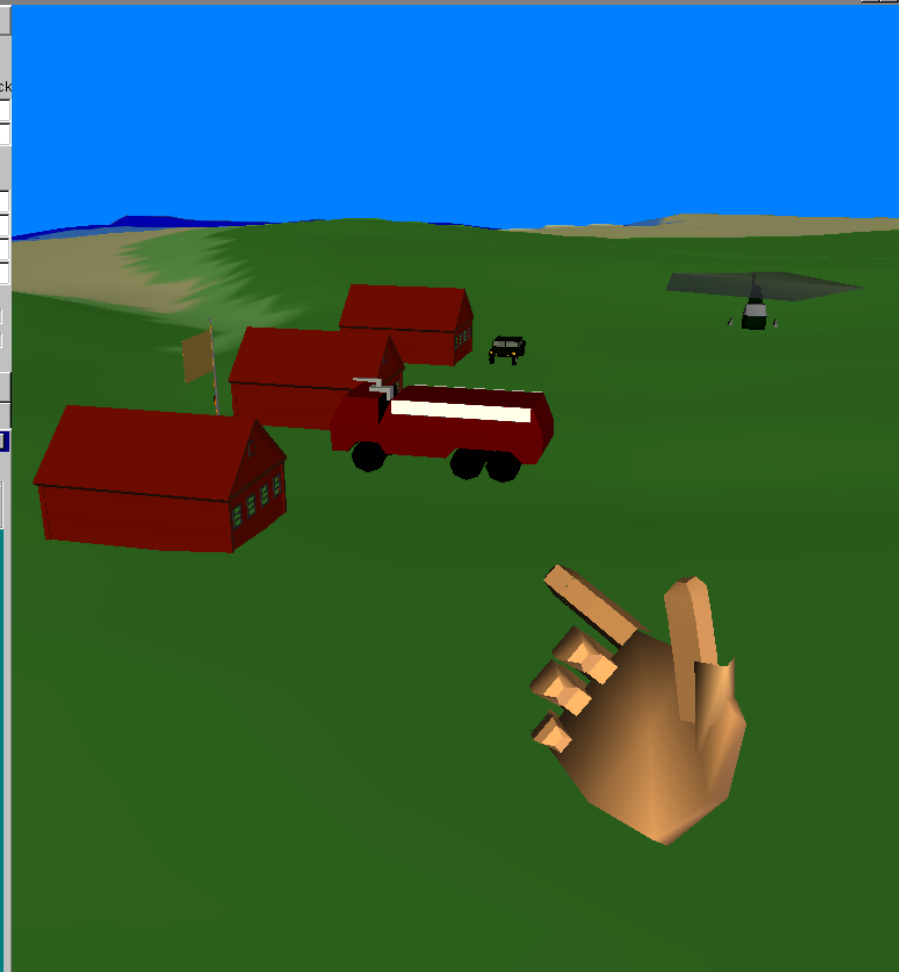
Pingkian

Rosario

(c) 1997 ESRI

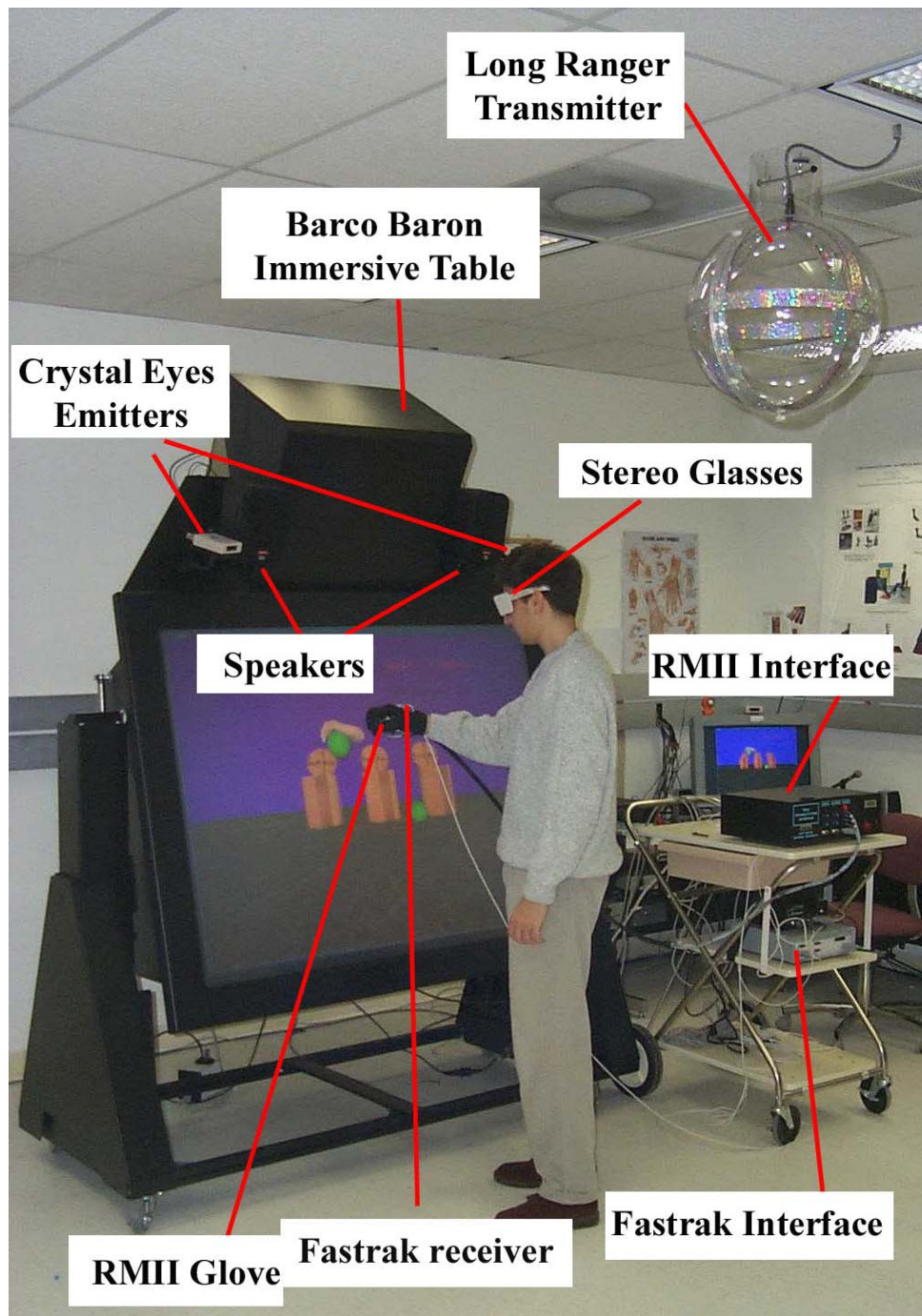
Approx. 38.0 miles across

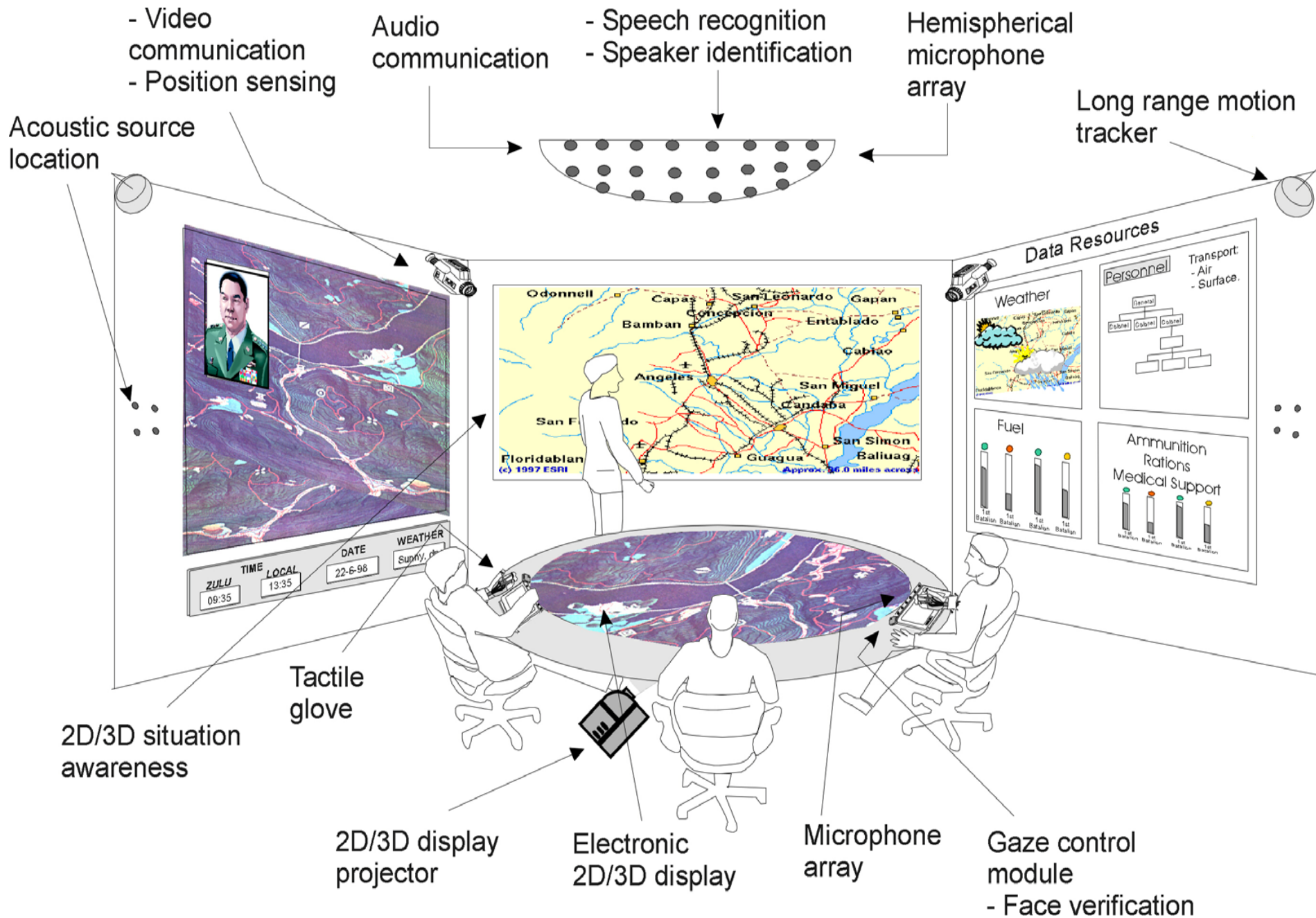
Ammo 100 Fuel 100 Personnel 100 Weapons 100



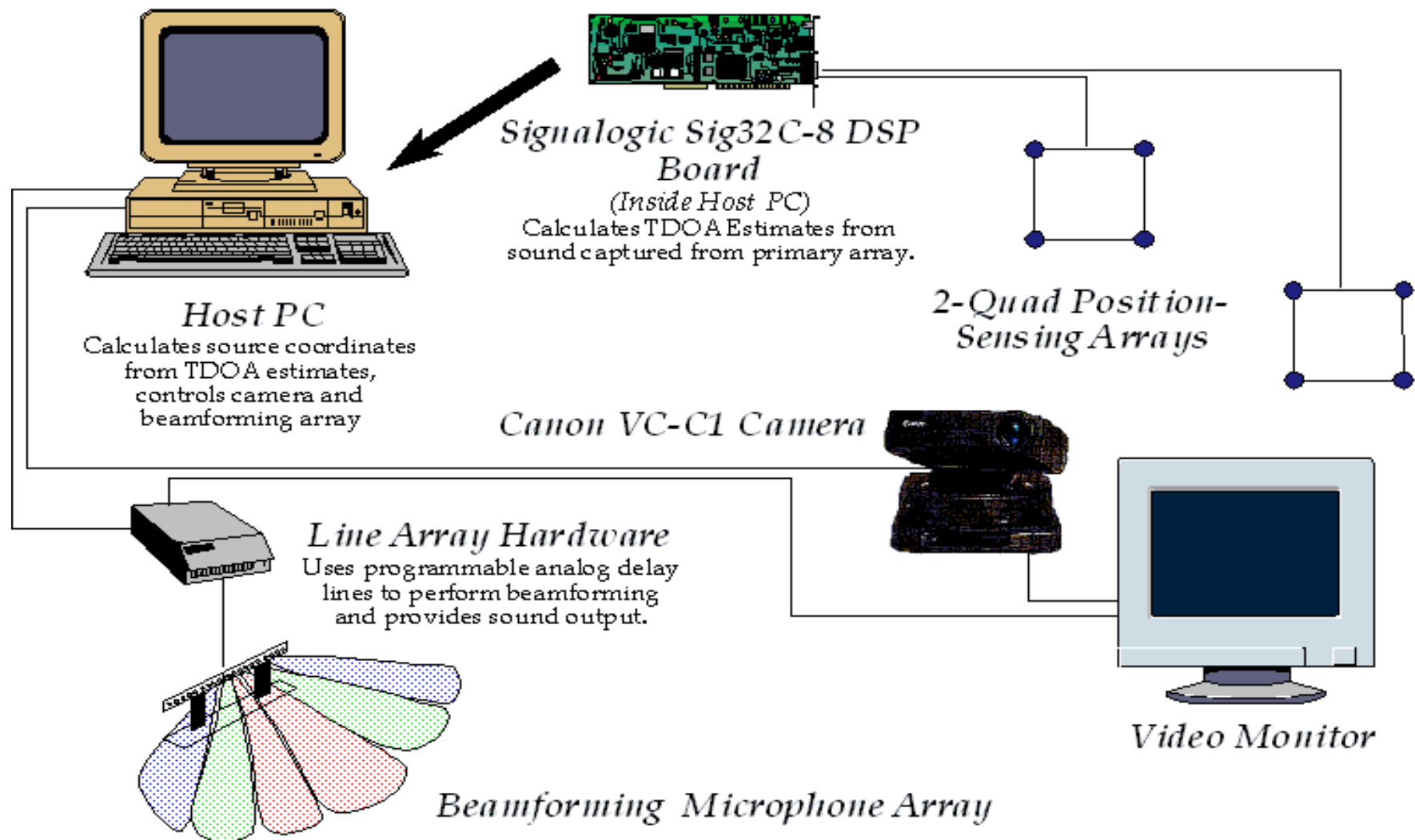
Large Volume Interactions



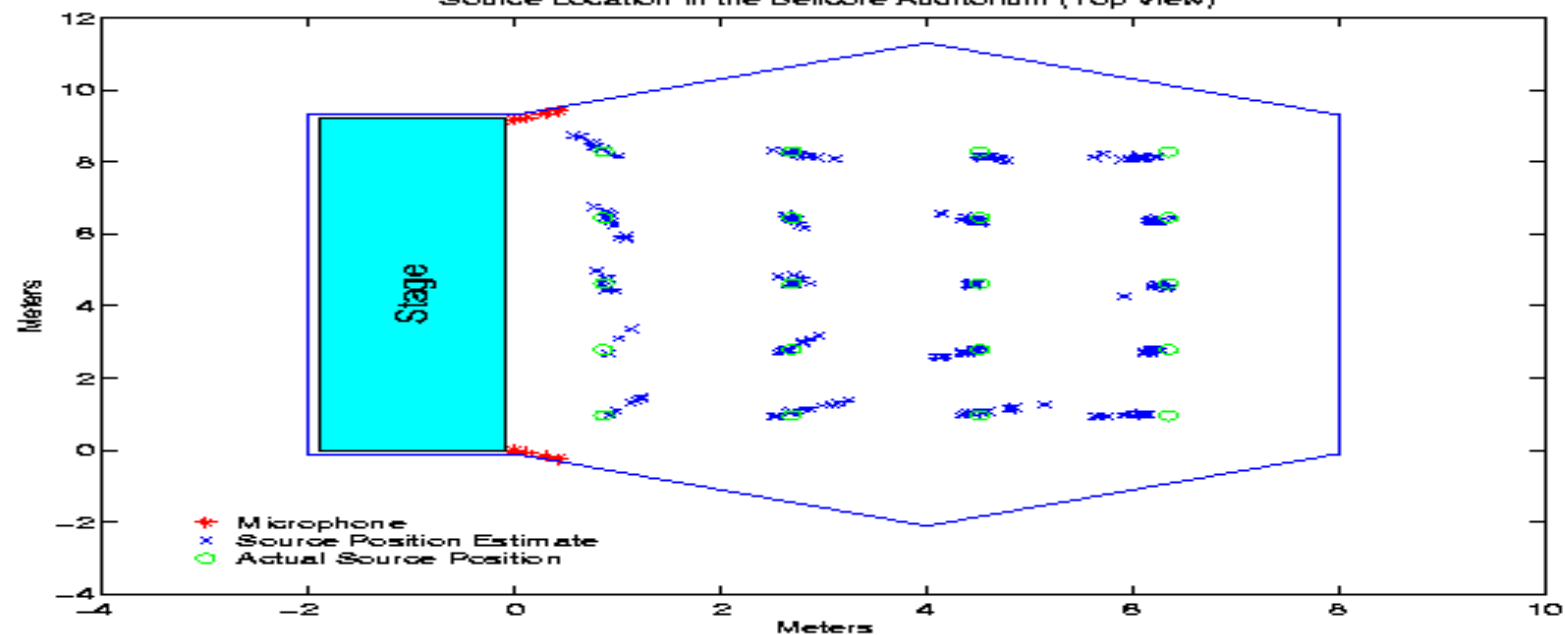




The Source Location System



Source Location in the Bellore Auditorium (Top View)



Source Location in the Bellore Auditorium (Side View)

